

## UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE <b>February 1999</b>		
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>						
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	151520	104000	29544	23938	19299	20036	97346	116137	Continuing	Continuing
D2TT Bradley A3 IOTE	5110	2904	0	0	0	0	0	0	0	9974
D330 Abrams Tank Improvement Program	37048	9359	12056	19270	18799	20036	83907	96566	Continuing	Continuing
D344 Fire Support Team Vehicle Integration	7093	10901	11368	2168	0	0	0	0	0	84938
D365 Bradley Linebacker	29	0	0	0	0	0	0	0	0	0
D371 Bradley Base Sustainment Program	71604	67476	3221	0	0	0	9508	9761	Continuing	Continuing
D718 Ground Combat Vehicle HTI	16945	8952	0	0	0	0	0	0	0	25897
D728 Heavy Assault Bridge Improvements	0	0	0	0	0	0	3931	9810	28000	41741
DC64 DC64	13691	4408	2899	2500	500	0	0	0	0	0
<p><b>A. <u>Mission Description and Budget Item Justification:</u></b> This Program Element (PE) responds to vehicle deficiencies identified during Desert Storm, continues technical system upgrades, and addresses needed evolutionary enhancements to tracked combat (Abrams and Bradley) and tactical (Bradley FIST) vehicles. This PE provides combat effectiveness enhancements for the Abrams Tank through a series of product improvements to the current M1A2 production vehicles. Additional improvements allow the M1A2 SEP tank to operate effectively with the M2A3 Bradley. This PE also addresses future product improvements to the M2A3.</p>										

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7 - Operational System Development

PE NUMBER AND TITLE

0203735A Combat Vehicle Improvement Programs

<b>B. Program Change Summary</b>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	161497	94756	28439	4983
Appropriated Value	167020	104756		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-5523	-756		
b. SBIR/STTR	-4050			
c. Omnibus or Other Above Threshold Reductions	-4000			
d. Below Threshold Reprogramming	-1927			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			+1105	+18955
Current Budget Submit ( <u>FY 2000/ 2001</u> PB)	151520	104000	29544	23938

Change Summary Explanation: Funding added in FY 2000 and FY 2001 for Abrams Live Fire and Survivability Test.

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BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>					PROJECT <b>D2TT</b>	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D2TT Bradley A3 IOTE	5110	2904	0	0	0	0	0	0	0	9974
<p><b>A. <u>Mission Description and Justification:</u></b> This project provides for the initial operational test and evaluation (IOTE) of Bradley A3 pre-production vehicles in order to generate a system performance profile in support of a Milestone III decision. Critical areas for test include lethality, survivability, mobility, and sustainability.</p> <p><b>FY 1998 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 5110 Provided Testing Support [Limited User Testing (LUT I &amp; II)]</li> </ul> <p>Total 5110</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 2827 Will Provide Testing Support [Initial Operational Test and Evaluation (IOTE)]</li> <li>• 77 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs</li> </ul> <p>Total 2904</p> <p><b>FY 2000 Planned Program:</b> Project not funded in FY 2000</p> <p><b>FY 2001 Planned Program:</b> Project not funded in FY 2001</p>										
<b>B. <u>Other Program Funding Summary</u></b>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
Bradley Base Sustainment (G80717)	112723	269490	333233	399997	417690	364917	406986	406895	Cont	Cont
<p><b>C. <u>Acquisition Strategy:</u></b> All funding in this project will be executed for Operational Tests by OEC.</p>										
<b>D. <u>Schedule Profile</u></b>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
LUT 1		3Q*								
LUT 2/OE		4Q*								
IOTE			3Q							
<div style="display: flex; justify-content: space-between; padding: 10px;"> <span>Project D2TT</span> <span>Page 3 of 17 Pages</span> <span>Exhibit R-2A (PE 0203735A)</span> </div>										



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BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>				PROJECT <b>D330</b>		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D330 Abrams Tank Improvement Program	37048	9359	12056	19270	18799	20036	83907	96566	Continuing	Continuing

**A. Mission Description and Justification:** This project funds improvements to the Abrams Main Battle Tank (M1 series). The Abrams mission is to close with and destroy enemy forces on the integrated battlefield using firepower, maneuver, and shock effect. The current production model, the M1A2, is the Army's first fully digital ground combat system. The M1A2 System Enhancement Program (SEP) is the name given to the latest group or "block" of improvements funded under this project. SEP is an upgrade to the computer core that is the essence of the M1A2. It provides better microprocessors, color flat panel displays, more memory capacity, better Soldier-Machine Interface (SMI), and a new open operating system. An Under Armor Auxiliary Power Unit (UAAPU) is being developed for production in order to mitigate power demands on the batteries so that all systems may operate without turning on the main engine. A new thermal management system will dissipate the heat generated by the electronic components. The M1A2's formidable target acquisition capabilities will also be significantly enhanced with the development for production of the 2nd Generation Forward Looking Infra-Red (2nd Gen FLIR) technology. Both the Gunner's Primary Sight (GPS) and the Commander's Independent Thermal Viewer (CITV) will be modified to integrate the improved thermal imaging capabilities of the new FLIR technology.

The first M1A2 SEP tank is scheduled for production at the end of FY 1999. The M1A2 SEP tank will be capable of running the Army's Common Operating Environment (ACOE) software for digital communication with the rest of the combined arms team. ACOE software integration is funded in PE 0203758A. Its computer systems will also accommodate future growth without significant hardware changes. An M1A2 Live Fire Testing Program is planned for fiscal years 2000-2003. Post SEP efforts will focus on improvements yielding significant life cycle cost reductions or survivability enhancements.

A program to digitize the M1A1 tank began in FY 1997 and continues through FY 1999. All of the development effort for this is being funded by PE 0203758A.

**FY 1998 Accomplishments:**

- 25480 Completed fabrication and assembly of demonstration hardware, continued logistics, quality and other engineering efforts
- 8322 Continued contractor component testing and began joint government / contractor system testing
- 3246 Provided Government Support/GFE

Total 37048

**FY 1999 Planned Program:**

- 3211 Complete engineering and testing of hardware/software on tank
- 2900 Provide Government Support/GFE
- 3000 Conduct Direct Support Electrical System Test Set (DSESTS) engineering efforts
- 248 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 9359

Project D330

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<p><b>FY 2000 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 4933 Integration of Battlefield Combat Identification System (BCIS) into the M1A2 SEP tank</li> <li>• 7123 Begin DoD directed M1A2 Abrams Live Fire and Survivability Test</li> </ul> <p>Total 12056</p> <p><b>FY 2001 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 19270 Continue DoD directed M1A2 Abrams Live Fire and Survivability Test</li> </ul> <p>Total 19270</p>																																																																																																												
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<p><b>C. <u>Acquisition Strategy:</u></b> General Dynamics Land Systems Division (GDLS) is the prime contractor for this development program. Texas Instruments, Inc. is the principal contractor developing the FLIR sights, which the Government will provide to General Dynamics. The cost plus fixed fee contract with General Dynamics was awarded on 14 September 1994.</p>																																																																																																												
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<b>ARMY RDT&amp;E COST ANALYSIS (R-3)</b>										DATE <b>February 1999</b>		
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>						PROJECT <b>D330</b>		

  

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Prior Contracts			472549								472549	472549
b. SEP/FLIR Phase I	SS-CPFF	General Dynamics	4688								4688	6984
c. SEP/FLIR Phase II	SS-CPFF	General Dynamics Sterling Heights, MI	115702								115702	137900
d. FLIR Integration	C-CPAF	Texas Instruments McKinney, TX	25000								25000	25000
e. BCIS Integration	TBD					4033					4033	
Subtotal Product Development:			617939			4033					621972	

Remark: GDLS contracts (Phase I / Phase II) include funding from 0203758A / D374 and 0604649A / DG26.

  

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Gov't Support / GFE	MIPR	TACOM / OGA's	44685	2900		900					48485	
b. DSESTS Requirements	MIPR	TACOM / OGA's		3000							3000	
c. SBIR / STTR				248							248	
Subtotal Support Costs:			44685	6148		900					51733	

  

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various Test Sites	MIPR		40178	3211		7123		19270			69782	
Subtotal Test and Evaluation:			40178	3211		7123		19270			69782	

  

IV. Management Services: Not applicable

  

Project Total Cost:			702802	9359		12056		19270			743487	
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Project D330
Page 6 of 17 Pages
Exhibit R-3 (PE 0203735A)

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<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D344 Fire Support Team Vehicle Integration	7093	10901	11368	2168	0	0	0	0	0	84938

**A. Mission Description and Justification:** The Bradley Fire Support (BFIST) vehicle program integrates Mission Equipment Packages (MEP) into a Bradley Fighting Vehicle and supports heavy maneuver force operations. BFIST replaces the aging M981 Fire Support Vehicle allowing for fire support teams in our heavy divisions. BFIST allows fire support operations to be performed on the battlefield in vehicles with the same signature, survivability, and mobility as other Bradley maneuver units. This program supports material development and conversion of selected Bradley A2 Operation Desert Storm (ODS) based upgrades and Bradley A3 vehicles to the BFIST configuration. The A2 ODS based BFIST is designated M7 and the A3 version is A3 BFIST.

**FY 1998 Accomplishments:**

- 1137 Phase I Design Engineering
- 1324 Phase I Prototype Manufacturing
- 1138 Program Management
- 1620 3 LRIP IOTE/Test Vehicles
- 1874 DSESTS

Total 7093

**FY 1999 Planned Program:**

- 586 Phase I Test Planning
- 8241 Phase II Design Engineering
- 825 Phase II Pilot Production
- 961 Program Management
- 288 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 10901

**FY 2000 Planned Program:**

- 6910 Phase II Design Engineering
- 2300 Phase II Pilot Production
- 1158 Program Management
- 1000 Testing

Total 11368

Project D344



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<p><b>FY 2001 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 968 Phase II Design Engineering</li> <li>• 300 Program Management</li> <li>• 900 Testing</li> </ul> <p>Total 2168</p>											
<b>B. Other Program Funding Summary</b>		<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
GZ2300 FIST Vehicle (M7/A3 BFIST)		15237	24656	27338	31103	35888	50948	40205	38646	15000	279021
<p><b>C. Acquisition Strategy:</b> The BFIST program is executed in two-phases: Phase I converts Bradley A2 ODS platforms to the M7 BFIST configuration and Phase II converts Bradley A3 platforms to the A3 BFIST configuration. A Phase I Cost Plus Incentive Fixed Fee (CPIF), Engineering and Manufacturing Development (EMD) contract through full and open competition requires design and fabrication of four (4) BFIST prototypes for pre-production/user testing. Sole Source/Firm Fixed Price (SS/FFP) Low Rate Initial Production (LRIP) contract with options followed a successful milestone decision. Follow-on Phase II focuses on the A3 BFIST. Full Rate Production contracts will be awarded for production of the Bradley BFIST.</p>											
<b>D. Schedule Profile</b>		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
<b>Phase I</b>											
First A2 ODS BFIST Prototype		4Q*									
Pre-Production Verification Test C/G		4Q*									
Limited User Test #1		4Q*									
LRIP Milestone Decision		4Q*									
LRIP Contract Award			3Q*								
<b>Phase II</b>											
Begin Design Engineering Trade Studies			3Q*								
Contract Award				2Q							
Preliminary/Critical Design Reviews				4Q							
Vehicle Deliveries					4Q						
Vehicle Qualification Test						1Q					
* Milestone Completed											
Project D344				Page 8 of 17 Pages				Exhibit R-2A (PE 0203735A)			

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## ARMY RDT&amp;E COST ANALYSIS (R-3)

DATE

February 1999

BUDGET ACTIVITY

7 - Operational System Development

PE NUMBER AND TITLE

0203735A Combat Vehicle Improvement Programs

PROJECT

D344

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. BFIST Phase I	C/CPIF	UDLP, San Jose, CA	35794	500	Nov 98						36294	
b. BFIST STS	CPFF	UDLP, San Jose, CA	7755								7755	
c. M7 LRIP	SS/FFP	UDLP, San Jose/York	1620								1620	
d. BFIST Phase II	CPAF	UDLP, York, PA		9354	Mar 99	9210	Dec 99	968	Dec 00		19532	
e. DSESTS	CPFF	PEI, Huntsville, AL	1874								1874	
Subtotal Product Development:			47043	9854		9210		968			67075	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM/Govt	MIPR	PMO, Warren, I/AMCOM, Huntsville, AL	11904	961	Oct 98	1158	Oct 99	300	Oct 00		14323	
Subtotal Support Costs:			11904	961		1158		300			14323	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATC/TECOM	MIPR	ATC, WSMR, YPG	1554	86	Nov 98	1000	Nov 99	900	Nov 00		3540	
Subtotal Test and Evaluation:			1554	86		1000		900			3540	
IV. Management Services: Not applicable												
Project Total Cost:			60501	10901		11368		2168			84938	

Project D344

Page 9 of 17 Pages

Exhibit R-3 (PE 0203735A)

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE <b>February 1999</b>		
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>				PROJECT <b>D371</b>		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D371 Bradley Base Sustainment Program	71604	67476	3221	0	0	0	9508	9761	Continuing	Continuing
<p><b>A. <u>Mission Description and Justification:</u></b> The Bradley A3 program upgrades a proven, tracked combat vehicle with digital command and control, increased situational awareness, enhanced lethality and survivability, and supportability/sustainability improvements. This project funds engineering and manufacturing development (EMD) of the Bradley A3. The effort develops and fully integrates digital electronics featuring a 1553 databus core electronic architecture and upgraded vehicle system software packages (command and control, navigation, communications, fire control, system/component diagnostics, and embedded training capabilities), 2nd Generation FLIR, and other systems/components into renovated (overhauled) Bradley A2s. Current plans call for conversion of 1109 Bradley A2s to the Bradley A3 configuration.</p> <p><b>FY 1998 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 64188 Continued Design Engineering Effort</li> <li>• 1400 Continued Prototype Manufacturing Effort</li> <li>• 2381 Continued Prototype Qualification Testing and Live Fire Testing</li> <li>• 3635 Project Management</li> </ul> <p>Total 71604</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 46735 Continue Design Engineering Effort</li> <li>• 15888 Complete Live Fire and PQT Testing</li> <li>• 2289 Project Management</li> <li>• 2564 Small Business Innovative Research and Small Business Technology Transfer Program</li> </ul> <p>Total 67476</p> <p><b>FY 2000 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 657 Design closeout</li> <li>• 986 Combat ID</li> <li>• 978 Digitization</li> <li>• 600 Project Management</li> </ul> <p>Total 3221</p>										
Project D371			Page 10 of 17 Pages			Exhibit R-2A (PE 0203735A)				

## UNCLASSIFIED

<b>ARMY RDT&amp;E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)</b>								DATE <b>February 1999</b>		
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>				PROJECT <b>D371</b>		
FY 2001 Planned Program: Project not funded in FY 2001										
<b>B. <u>Other Program Funding Summary</u></b>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
G80717 Bradley Base Sustainment	112723	269490	333233	399997	417690	364917	406986	406895	Cont	Cont
GE0163 Spares (Initial) BFVS	286	7111	9173	11628	10789	10990	5218	7086	Cont	Cont
G20900 Bradley FVS Training Devices		12695	23441	18715	2603	3195	2501	4430	Cont	Cont
PE 0203758A (Digitization)	2269	4600								6869
<p><b>C. <u>Acquisition Strategy:</u></b> Milestone II/IV for the Bradley A3 was held in FY94 and the program was approved for EMD. United Defense was subsequently awarded a Cost Plus Incentive Fee (CPIF) contract for development and integration of advanced A3 systems and components. Ten principal subcontractors, comprising approximately 33% of the contract cost, are participating in the EMD work effort. The first of eight prototypes was completed in 4QFY96; six prototypes are currently undergoing contractor and government production qualification testing. Low Rate Initial Production (LRIP) procurements were awarded in FY 1997 and FY 1998. Limited User Testing and Live Fire Testing will be conducted in FY98 and FY 1999, respectively.</p>										
<b>D. <u>Schedule Profile</u></b>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
PQT-Government	4Q*									
LRIP IPR	4Q*									
LRIP Award (Phased Awards)	4Q*	3Q*	1Q*							
Limited User Test #1		3Q*								
Operational Experiment		4Q*								
LFTE		4Q	1,2,3Q							
LOG DEMO			2Q							
Limited User Test #2			4Q							
IOTE				1Q						
MS III				2Q						
<p>* Milestone Completed</p>										
<div style="display: flex; justify-content: space-between; padding: 10px;"> <span>Project D371</span> <span>Page 11 of 17 Pages</span> <span>Exhibit R-2A (PE 0203735A)</span> </div>										

## UNCLASSIFIED

<b>ARMY RDT&amp;E COST ANALYSIS (R-3)</b>											DATE <b>February 1999</b>	
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>						PROJECT <b>D371</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. A3 EMD	CPIF	United Defense, San Jose, CA	274284	20716	Feb 99	300	Dec 99				295300	
b. IBAS EMD	SS/CPIF	Texas Instruments, McKinney, TX	65654								65654	
c. IBAS TPS Development	CPFF	Pentastar, Huntsville, AL	1863								1863	
d. Other Contracts			34746	28583	Feb 99	2321	Feb 99			19269	84919	
Subtotal Product Dev:			376547	49299		2621				19269	447736	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PMO	MIPR	PMO, Warren, MI	7058	1049	Sep 99	400	Sep 00				8507	
b. PM CCAWS	MIPR	PMO, Huntsville, AL	17363	500	Jan 99						17863	
c. Other	MIPRs	Various OGAs	4551	740	May 99	200	May 00				5491	
Subtotal Support Costs:			28972	2289		600					31861	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PQT, LUT II, LFTE, IOTE	MIPR	ATC, WSMR, YPG, ARL, DPG, CRTA	6877	15888							22765	
Subtotal Test and Evaluation:			6877	15888							22765	
Project Total Cost:			412396	67476		3221				19269	502362	
<div style="display: flex; justify-content: space-between;"> <span>Project D371</span> <span>Page 12 of 17 Pages</span> <span>Exhibit R-3 (PE 0203735A)</span> </div>												

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE <b>February 1999</b>		
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>				PROJECT <b>D718</b>		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D718 Ground Combat Vehicle HTI	16945	8952	0	0	0	0	0	0	0	25897

**A. Mission Description and Budget Item Justification:** The Suite of Survivability Enhancement Systems (SSES) is an effort to develop, produce and apply Defensive Aids Suites (DAS) to all Army ground combat vehicles. A DAS inhibits successful engagement of the host vehicle by providing advance warning of attack and activating countermeasures, which detect the incoming munitions. Advance warning enables the crew to take defensive action such as maneuvering or returning fire on the enemy. The Laser Warning Receiver (LWR) will provide warning of laser assisted engagement of the host vehicle. Current analysis shows that LWR's will reduce losses of Bradley Vehicles and casualties to Bradley crewmembers by 33%. In addition, LWR greatly improves the ability of the Bradley to detect targets and will allow the LWR equipped Bradley to kill attacking enemy weapons at twice the rate previously attained. The CDA will integrate current and future sensors and countermeasures into the host vehicle's electronic architecture and will provide sensor fusion, threat prioritization and manual, semi-automatic or automatic activation of countermeasures. SSES leverages hit avoidance technology developed for aviation electronic warfare (EW) systems, incorporates changes developed to meet ground vehicle requirements, and returns technical improvements to the aviation EW community. It also incorporates ground vehicle specific hit avoidance technology being developed within the technology base. The CDA leverages work accomplished under the Hit Avoidance Advanced Technology Demonstration.

The Field Emissive Display (FED) program, also known as the High Performance Flat Panel Display (FPD) technology development program, is an effort to develop common, multi-purpose displays for Army ground combat vehicles. This includes the capability for real time interpretation and application of command and control, target imagery and situation awareness information. The FPD will also provide common, multi-purpose, and high performance (low power, color, and sunlight readable, high-resolution) system displays. The application of the FPD supports the Force XXI Battle Command – Brigade and Below (FBCB2) operational requirement for the display of common imagery and data in removable and remote operations. In doing so, this program focuses on the near to mid-term opportunity to improve the performance of system displays for both tracked and wheeled combat and combat support vehicles. The high performance FPD program takes advantage of advanced display technologies under development by the Defense Advanced Research Projects Agency (DARPA) by incorporating changes to meet the requirements of ground systems. System display performance specifications will optimize industry standard interfaces allowing incremental and inexpensive upgrades for future information display requirements. This program has been funded through congressional plus-ups, with \$7.0M provided in FY97 and \$12.0M in FY98 and \$7.0M in FY99.

As additional HTI projects are identified with funding, these projects will be added to and funded under project D718.

**FY 1998 Accomplishments:**

- 10540 Research and develop high resolution FED display (FED)
- 225 Evaluate FED Prototype Vehicle Interfaces are in process (FED)
- 472 Support and Management (FED)
- 3018 Vehicle Integration on BFVS A3. (SSES)

Project D718 Page 13 of 17 Pages Exhibit R-2A (PE 0203735A)

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<b>ARMY RDT&amp;E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)</b>		DATE <b>February 1999</b>																																																						
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PROJECT <b>D718</b>																																																								
<p><b>FY 1998 Accomplishments: (continued)</b></p> <ul style="list-style-type: none"> <li>• 437 CDA Development and Test on Bradley A3 SIL (SSES)</li> <li>• 661 Testing (Including Operational) (SSES)</li> <li>• 262 Systems Engineering and Simulation (SSES)</li> <li>• 464 Logistics Development (SSES)</li> <li>• 866 Support and Management (SSES)</li> </ul> <p>Total        16945</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 50 Product Integration and Test Support (SSES)</li> <li>• 523 Government Tech Support-LWR (SSES)</li> <li>• 938 Government Test and Testing Support (SSES)</li> <li>• 991 Program management administration (SSES and FED)</li> <li>• 6213 Design and build high resolution FPD engineering unit (FED)</li> <li>• 237 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs</li> </ul> <p>Total        8952</p> <p><b>FY 2000 Planned Program:</b> Project not funded in FY 2000</p> <p><b>FY 2001 Planned Program:</b> Project not funded in FY 2001</p> <p><b>B. <u>Other Program Funding Summary:</u></b> None</p> <p><b>C. <u>Acquisition Strategy:</u></b> With regard to LWR effort, we used existing contracts for RDTE and enabled the return of technology improvement to aviation electronic warfare system.</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <tr> <th style="text-align: left;"><b>D. <u>Schedule Profile</u></b></th> <th><u>FY 1998</u></th> <th><u>FY 1999</u></th> <th><u>FY 2000</u></th> <th><u>FY 2001</u></th> <th><u>FY 2002</u></th> <th><u>FY 2003</u></th> <th><u>FY 2004</u></th> <th><u>FY 2005</u></th> </tr> <tr> <td>LWR Technical Tests</td> <td align="center">2Q</td> <td align="center">2Q</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>LWR Vehicle Integration Test</td> <td></td> <td align="center">1-3Q</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>LWR CDA Integration (SIL)</td> <td align="center">3Q</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>LUT 1</td> <td align="center">1Q</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>IOTE</td> <td></td> <td align="center">1Q</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			<b>D. <u>Schedule Profile</u></b>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	LWR Technical Tests	2Q	2Q							LWR Vehicle Integration Test		1-3Q							LWR CDA Integration (SIL)	3Q								LUT 1	1Q								IOTE		1Q						
<b>D. <u>Schedule Profile</u></b>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>																																																
LWR Technical Tests	2Q	2Q																																																						
LWR Vehicle Integration Test		1-3Q																																																						
LWR CDA Integration (SIL)	3Q																																																							
LUT 1	1Q																																																							
IOTE		1Q																																																						
<div style="display: flex; justify-content: space-between;"> <span>Project D718</span> <span>Page 14 of 17 Pages</span> <span>Exhibit R-2A (PE 0203735A)</span> </div>																																																								

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE <b>February 1999</b>		
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>				PROJECT <b>D718</b>	
<b>D. Schedule Profile</b>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	
PEO IPT		1Q							
FED Technical Evaluation		3Q							
Common FED Spec/ICD Development	1-4Q	1-2Q							
High Resolution Development FED		1-4Q							
Critical Item Development Spec		2Q							

Project D718Page 15 of 17 PagesExhibit R-2A (PE 0203735A)

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<b>ARMY RDT&amp;E COST ANALYSIS (R-3)</b>										DATE <b>February 1999</b>		
BUDGET ACTIVITY <b>7 - Operational System Development</b>					PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>					PROJECT <b>D718</b>		

  

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. LWR Development	STS/FFP	ROSI, Danbury CT	4170	0	-	0	-	0	-	0	4170	
b. LWR Integration	CPIF	UDLP, Santa Clara, CA	4989	50	2QTR99	0	-	0	-	0	5039	
c. LWR CDA	CPAF	SLM, Nashua, NH	470	0	-	0	-	0	-	0	470	
d. FED	Cost/Share	MICRON, Boise, ID	16761	5200	2QTR99	0	-	0	-	0	21961	
e. FED	CPIF	GDLS, Sterling Hts, MI	415	625	3QTR99	0	-	0	-	0	1040	
f. FED	CPIF	UDLP, Santa Clara, CA	140	625	3QTR99	0	-	0	-	0	765	
Subtotal Product Development:			26945	6500							33445	

  

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Tech Spt LWR	MIPR	CECOM, NJ	1664	140	1Qtr99	0	-	0	-	0	1804	
b. Tech Spt LWR	MIPR	TARDEC, MI	205	20	1Qtr99	0	-	0	-	0	225	
c. Support Mgt LWR	CPFF	Sig/Rsch, MI	73	20	1Qtr99	0	-	0	-	0	93	
d. Engr Spt LWR	CPAF	Camber, MI	511	0	-	0	-	0	-	0	511	
e. Training Aid Develop LWR	MIPR	STRICOM, FL	148	135	1Qtr99	0	-	0	-	0	283	
f. IBAS Display LWR	MIPR	PM CCAWS, AL	30	0	-	0	-	0	-	0	30	
g. Engr Test Spt LWR	MIPR	SLAD (OMI), NM	454	208	2Qtr99	0	-	0	-	0	662	
Subtotal Support Costs:			3085	523							3608	

  

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Field Test LWR	MIPR	RTTC, AL	68	0	-	0	-	0	-	0	68	
b. Missile Warning LWR	MIPR	Naval Rsch Wash DC	35			0	-	0	-	0	35	

  

Project D718	Page 16 of 17 Pages	Exhibit R-3 (PE 0203735A)
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ARMY RDT&E COST ANALYSIS (R-3)										DATE <b>February 1999</b>		
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0203735A Combat Vehicle Improvement Programs</b>						PROJECT <b>D718</b>		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. LWR User Eval	MIPR	Eglin AFB, FL	10	450	2QTR99	0	-	0	-	0	460	
d. LWR Tech Test	MIPR	Yuma, AZ	0	208	2QTR99	0	-	0	-	0	208	
e. LWR User Eval	MIPR	Ft. Benning, GA	0	130	2QTR99	0	-	0	-	0	130	
f. LWR User Eval	MIPR	Other	0	150	2QTR99	0	-	0	-	0	150	
Subtotal Test and Evaluation:			113	938							1051	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In House Spt LWR	MIPR	PM GSI, MI	916	379	1Qtr99	0	-	0	-	0	1295	
b. In House Spt FED	MIPR	PM GSI, MI	633	375	1Qtr99	0	-	0	-	0	1008	
c. SBIR/STTR	N/A		0	237	-						237	
Subtotal Management Services:			1549	991							2540	
Project Total Cost:			31692	8952							40644	

Project D718
Page 17 of 17 Pages
Exhibit R-3 (PE 0203735A)

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